



# The risk to biodiversity along China's Belt and Road Initiative (BRI)

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The Belt and Road Initiative (BRI) poses a great risk to biodiversity, particularly as many of the infrastructure projects are due to take place in regions that are home to threatened and endangered species found nowhere else in the world. This policy brief makes recommendations for the UK government to develop a BRI Biodiversity Strategy.

## Recommendations

In order to ensure that risks to biodiversity are understood and limited along the BRI, the UK should:

- **encourage early assessment** of impacts at the feasibility or scoping stage, or during regional planning stages in countries of interest to the UK by working with the Foreign and Commonwealth Office (FCO) to apply pressure locally
- **ensure that UK companies participating in BRI projects** incorporate strategic environmental and cumulative impact assessments at the **regional scales** and environmental impact assessments at the **project scale**
- if the UK is directly involved in infrastructure projects along the Belt and Road, ensure that any approach taken does its best to mitigate environmental damage to biodiversity by adopting the **mitigation hierarchy**. The mitigation hierarchy includes four broad sequential actions which should be taken to (1) avoid, (2) minimise, (3) remediate, and (4) offset biodiversity loss
- there is also potential for the BRI to **contribute positively to conservation** through making biodiversity core to the BRI such as through the creation of protected areas

## Context

China's Belt and Road Initiative (BRI) is expected to be the largest infrastructure development scheme of the 21st century. So far, BRI involves over 80 countries and overall investments estimated between US\$ 1 to 8.5 trillion. China's President Xi Jinping describes the BRI as "an economic

cooperation initiative" focusing on connectivity and trade. Among China's five primary BRI goals, the most visible and controversial goal is "increased connectivity through development of infrastructure and communications".

The BRI aims to promote connectivity via six terrestrial infrastructure corridors and a marine economic route. These routes are expected to connect over half of the world's population. Within the terrestrial corridors BRI will promote the development of linear infrastructure such as roads and rail, site-based infrastructure such as dams and power stations, and special economic zones. While the geopolitical implications of the BRI have been thoroughly discussed in both the policy literature and the media, **the impacts of BRI on biodiversity, in particular within these infrastructure corridors, have received much less attention.**



### BRI's potential for great and irreversible negative impacts on biodiversity

The recent UN Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem (IPBES) report outlined the catastrophic state of biodiversity and ecosystems across the world, with a million species at risk of extinction.

**BRI is likely to indirectly and directly impact on already fragile ecosystems and biodiversity.**

#### Indirect

Any increase in economic productivity at this scale will drive up the use of resources. These impacts are exacerbated by the choice of BRI investment.

According to the Global Environment Institute, **China has supported 240 coal power projects in 65 BRI countries** in a 15-year period to 2016.

Another big concern is the potential for the **relocation of polluting industries from China** to countries such as Pakistan with little industrial output and weak environmental and labour standards.

#### Direct

The **direct impacts of linear terrestrial infrastructure (ie roads and rail) on biodiversity** are well documented (Laurance et al, 2015). These include a range of ecological impacts such as habitat loss and fragmentation and increased accessibility – especially in frontier landscapes – resulting in increased illegal activities like poaching and logging.

Marine routes will likely exacerbate **the movement of invasive species and increase water and noise pollution** due to greater sea traffic. Major infrastructure development impacts include clearance of habitat and also impacts specific to the type of development (eg dams affect environmental flows).

Of great concern is **the impact of BRI on global biodiversity hotspots**, such as in Southeast Asia, home to numerous threatened and endangered species found nowhere else in the world (Figure 1). Southeast Asia is also home to the majority of planned BRI investment.

Another region of great concern is Central Asia which includes **frontier landscapes which are relatively undisturbed by human impacts**, in particular the Tibetan plateau, which is home to many of the largest rivers in the world.

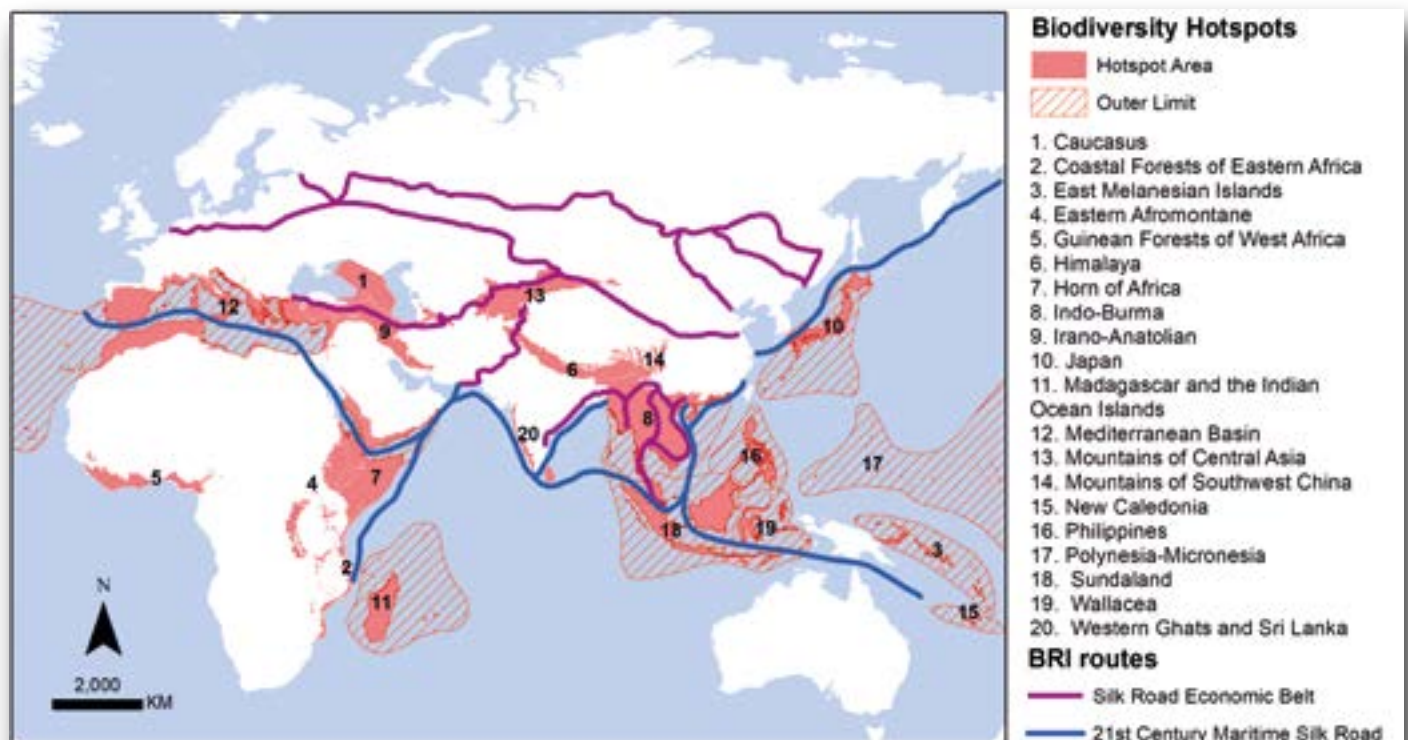


Figure 1: Biodiversity hotspots which represent biologically rich areas around the world that cover just 1.4% of Earth's land surface but contain more than 60% of all terrestrial species with BRI routes (Lechner et al, 2018).





### The challenge for planning and governments

There is little precedent for analysing and planning for the environmental impacts of infrastructure development at the scale of BRI. Its impacts are likely to be cumulative and transboundary. Current assessment methods need to be adapted to understand the complex multi-dimensional socio-environmental nature of BRI benefits and impacts. How can one plan, predict and mitigate impacts at such global scales? The tools and approaches are required urgently as bad environmental practices now may lock in environmental impacts for decades to come.

There are questions around how Western countries will manage BRI projects and influence the social and environmental sustainability of these projects.

Development under the BRI may be irreconcilable with existing commitments to environmental and social standards. For instance, the UK government recently became the first country in the world to declare a climate emergency.

It is promising that Chinese policy documents acknowledge the importance of sustainability including the Belt and Road Ecological and Environmental Cooperation Plan 2017 and the Guidance on Promoting Green Belt and Road 2017. The Asia Infrastructure Investment Bank's – one of the key funding agencies for BRI projects – Environmental and Social Framework includes

many of the key elements recommended above for ensuring developments are sustainable. In addition, environmental regulations and enforcement are improving within China. However, **whether Chinese companies and Chinese funded projects operating outside of China adhere to these standards is another matter.**

China analysts have pointed out that Chinese firms motivated by profit and assisted by bureaucratic disorganisation and negligence have exploited poorer nations by misrepresenting the feasibility or sustainability of infrastructure projects. It is very unclear who will enforce these standards. There is a role for foreign Western governments, with greater leverage than poorer recipient countries, particularly the UK government, to have a major influence here.





## Conclusion

The BRI is a development plan of unprecedented scope that has the potential to lead to negative environmental impacts of an unacceptable scale. It is important to adapt best-practice methods to the BRI's scale and the cumulative and transboundary nature of its expected impacts.

**The UK should actively enforce biodiversity protection in any future trade deals, help enforce environmental standards internationally and provide assistance to countries with weak environmental protection infrastructures.**

## Further information

For detailed information, please read our report: Teo, HC, AM Lechner, G Walton, FKS Chan, A Cheshmehzangi, M Tan-Mullins, HK Chan, T Sternberg, A Campos-Arceiz, 2019. Environmental impacts of infrastructure development under the Belt and Road Initiative. *Environment*, 6(6), 72: [mdpi.com/2076-3298/6/6/72](https://mdpi.com/2076-3298/6/6/72)

## Further reading

- Ascensão, F, Fahrig, L, Clevenger, AP, Corlett, RT, Jaeger, JAG, Laurance, WF, Pereira, HM, 2018. Environmental challenges for the Belt and Road Initiative. *Nature Sustainability*, 1, 206–209.
- Laurance, WF, Peletier-Jellema, A, Geenen, B, Koster, H, Verweij, P, Van Dijck, P, Lovejoy, TE, Schleicher, J, Van Kuijk, M, 2015. Reducing the global environmental impacts of rapid infrastructure expansion. *Current Biology*, 25, R259–R262.
- Lechner, AM, Chan, FKS, Campos-Arceiz, A, 2018. Biodiversity conservation should be a core value of China's Belt and Road Initiative. *Nature Ecology and Evolution*, 23, 23–24.

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